IEM Director Bin He and Research Team Made Breakthrough in Mind-Controlled Robotic Arm
A first-of-its-kind mind-controlled robotic arm that utilizes technology developed by Dr. Bin He, Professor of Biomedical Engineering and director of IEM and the Center for Neuroengineering (CNE), was featured by a variety of media including the Star Tribune, Fox News, KSTP, and Fox 9. “This is the first time in the world that people can operate a robotic arm to reach and grasp objects in a complex 3-D environment using only their thoughts without a brain implant,” says Dr. He. Building upon technology Dr. He developed for mind-controlled drones, the robotic arm system is a big step toward a future of medical applications that could range from rehabilitating stroke patients to helping paralyzed patients regain the ability to perform basic tasks in their everyday lives. This non-invasive technology also has unique merits compared to more expensive and risky implantable technologies aimed at achieving similar outcomes. The work was published last week in Scientific Reports, a Nature research journal.

University of Minnesota Pioneers New Robotic Arm Controlled by the Mind
University of Minnesota Researchers Use Robotic Arm to Turn Thoughts into Action

IEM Members Among Leadership of University of Minnesota Component of U.S. Department of Commerce Innovation Institute
Several IEM Members will help to lead a component of the recently-announced National Institute for Innovation in Manufacturing Biopharmaceuticals (NIIMBL), a consortium of companies, state governments and academic institutions that seeks to advance the rapidly-growing biopharmaceutical industry with innovative production processes and both the creation and training of its future workforce. The institute will be supported by what is expected to be more than $200 Million of public-private partnership funding including a $70 Million 5-year grant from the U.S. Department of Commerce.

The University of Minnesota component’s leadership team will include IEM Members Drs. Samira M. Azarin, Assistant Professor of Chemical Engineering and Materials Science; Vadim J. Gurvich, Research Associate Professor of Medicinal Chemistry; Wei-Shou Hu, Professor of Chemical Engineering and Materials Science; David H. McKenna, Jr., Professor of Lab Medicine and Pathology; and Jakub Tolar, Professor of Pediatrics, Director of the Stem Cell Institute and Executive Vice Dean of the Medical School.

U.S. Secretary of Commerce Penny Pritzker Announces Biopharmaceutical Manufacturing Institute

Blood Washing Device Invented by Allison Hubel is Featured by Twin Cities Business
A blood washing device invented by IEM Executive Committee Member Dr. Allison Hubel, Professor of Mechanical Engineering, and Director of the IEM-affiliated Biopreservation Core Resource (BioCoR), was featured by Twin Cities Business. The automated system cleanses from thawed blood glycerol preservatives, which are added to blood prior to its freezing for storage, and it does so more efficiently and safely than does a centrifuge, which has been the standard type of equipment used for this process and which requires more time and labor to use and results in high cell losses. Dr. Hubel’s device could ultimately help to make large strategic reserves available from blood produced from stem cells, during emergencies when insufficient quantities of donated blood are available – something which is not as possible with centrifuges. The device took a big step toward this future with a $223,000 Phase I NIH SBIR grant awarded in September to the start-up company seeking to commercialize it, Headwaters Innovation Inc., led by a successful local entrepreneur.

Veteran Medtech Player Seeks to Commercialize U. of M. Blood Washing Device
**Henry Balfour Discusses Epstein-Barr Virus with USA Today**

IEM Member Dr. Henry H. Balfour, Jr., Professor of Laboratory Medicine and Pathology, was interviewed by the USA Today about Epstein-Barr Virus (EBV), commonly-known as mono and “childhood kissing disease.” Dr. Balfour says that the disease can potentially have long-term consequences for those who suffer from it, including the 280,000 college freshmen that contract the disease, annually. "Epstein-Barr Virus is responsible for a number of chronic conditions, especially certain forms of cancer and autoimmune disease and even multiple sclerosis," says Dr. Balfour. Symptoms of the disease experienced later in life can include symptoms of the flu that don’t completely subside, joint pain and ringing in the ears, according to Dr. Balfour, who adds that the EBV virus can also lead to chronic fatigue and fibromyalgia. Dr. Balfour, who’s research is focused on the development of a vaccine against EBV, says that “the best way to deal with all these EBV diseases is to prevent them from happening in the first place.”

**Could Childhood Kissing Disease Root Your Mystery Illness?**

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**Kelvin Lim Discusses Use of Ecstasy to Treat PTSD with KARE 11**

Dr. Kelvin O. Lim, Professor of Psychiatry, Drs. T.J. and Ella M. Arneson Land Grant Chair in Human Behavior and Co-Chair of IEM’s Neuroengineering Theme was interviewed by KARE 11 about new, FDA-approved Phase III clinical trials of the party drug Ecstasy (MDMA) for the treatment of PTSD. MDMA is classified as a Schedule 1 drug with no currently accepted medical use. The new trials build upon research that included a trial in which MDMA was used as part of a broader treatment regimen, including therapy, that resulted in a 56% decrease in the severity of symptoms of PTSD and two-thirds of the patients no longer meeting the criteria for having the disorder. Dr. Lim, who has not studied MDMA, says that the potential use of MDMA to treat PTSD is “very promising and exciting” due to the lack of effective medications and that “thirty to forty percent of people don’t respond to treatment”. However, Dr. Lim cautions that if MDMA is approved as treatment for PTSD, mechanisms will need to be put in place to insure that it used in a safe and effective manner.

**FDA Approves Large-Scale Trial of Ecstasy to Treat PTSD**

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**Melena Bellin Discusses with Reuters Health Testing to Predict Insulin Dependence Following Total Pancreatectomy with Islet Autotransplantation**

Dr. Melena D. Bellin, Associate Professor of Pediatrics, discussed with Reuters Health the results of a study suggesting that the Lower Oral Glucose Tolerance Test (OGTT) can help to predict the insulin dependence of chronic pancreatitis patients following total pancreatectomy with islet autotransplantation (TPIAT). The research showed a relationship between patients’ glucose status prior to the procedure, as measured by OGTT, and the need for insulin therapy one year after the procedure. “While risk of diabetes is most often a secondary consideration (to pain control/quality of life) in selecting patients for TPIAT, it is very important that patients are provided a realistic expectation of outcomes in preoperative counseling,” says Dr. Bellin, who adds that “Some patients may choose not to undergo TPIAT knowing that their testing before surgery puts them at very high risk for lifelong insulin dependence after surgery.”

**OGTT Testing May Help Counsel Patients Before Total Pancreatectomy with Islet Autotransplantation**

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**Dick Bianco & Brenda Ogle Elected as 2017 AIMBE Fellows**

IEM members Drs. Richard W. Bianco, Associate Professor of Surgery and Program Director of Experimental Surgical Services, and Brenda M. Ogle, Associate Professor of Biomedical Engineering have been elected to the 2017 Class of American Institute for Medical and Biological Engineering (AIMBE) Fellows. Drs. Bianco and Ogle will join the AIMBE College of Fellows, which consists of approximately “1,500 individuals who are the outstanding bioengineers in academia, industry and government. These leaders in the field have distinguished themselves through their contributions in research, industrial practice and/or education.” Each will be inducted on March 20th at AIMBE’s Annual Even in Washington, D.C.

**AIMBE College of Fellows Nominations & Election**

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**Announcements**

**2017 Neuromodulation Symposium Abstract Submission Deadline**

The deadline for abstract submissions for the 5th Annual Minnesota Neuromodulation Symposium (#MNS2017) is Monday, January 9, 2017. We are welcoming abstracts from students, researchers, educators, and clinicians on any topic relating to neuromodulation, including invasive and noninvasive techniques, modeling, neurophysiology, behavior, new technologies, clinical applications, and education/training approaches. All accepted abstracts will be presented at a poster session, while top abstracts will be invited to give oral presentations or to submit a full manuscript to IEEE Transactions on Biomedical Engineering. Also, don’t forget to register for MNS 2017 which will be held April 13-14, 2017 at the Commons Hotel. Spaces are limited! More information is available at [neuromodulation.umn.edu](http://neuromodulation.umn.edu).